

## Course guide

### 340110 - ACEL-E6009 - Electric Drives

Last modified: 30/05/2024

**Unit in charge:** Vilanova i la Geltrú School of Engineering  
**Teaching unit:** 709 - DEE - Department of Electrical Engineering.

**Degree:** BACHELOR'S DEGREE IN ELECTRICAL ENGINEERING (Syllabus 2009). (Compulsory subject).  
BACHELOR'S DEGREE IN INDUSTRIAL ELECTRONICS AND AUTOMATIC CONTROL ENGINEERING (Syllabus 2009). (Optional subject).  
BACHELOR'S DEGREE IN MECHANICAL ENGINEERING (Syllabus 2009). (Optional subject).

**Academic year:** 2024    **ECTS Credits:** 6.0    **Languages:** Catalan

#### LECTURER

**Coordinating lecturer:** Pere Andrada Gascón  
**Others:** Marcel Torrent Burgués

#### PRIOR SKILLS

It is recommended to have attended Electric Machines I and Electric Machines II

#### DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

**Specific:**

- C. CE20. Knowledge of machine controlling and electrical operations and its applications.
- 4. CE34. Ability to design electric systems and systems of traction in vehicles.

**Transversal:**

- 2. SUSTAINABILITY AND SOCIAL COMMITMENT - Level 3. Taking social, economic and environmental factors into account in the application of solutions. Undertaking projects that tie in with human development and sustainability.
- 3. EFFECTIVE USE OF INFORMATION RESOURCES - Level 3. Planning and using the information necessary for an academic assignment (a final thesis, for example) based on a critical appraisal of the information resources used.

#### TEACHING METHODOLOGY

#### LEARNING OBJECTIVES OF THE SUBJECT

#### STUDY LOAD

Type	Hours	Percentage
Hours small group	15,0	10.00
Self study	90,0	60.00
Hours large group	45,0	30.00

**Total learning time:** 150 h

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### (ENG) Topic.-1. Fundamentals of electric drives

**Description:**

(in process)

**Full-or-part-time:** 20h

Theory classes: 4h

Practical classes: 2h

Laboratory classes: 4h

Self study : 10h

### (ENG) Topic 2.- Direct current motor drives

**Description:**

(in process)

**Full-or-part-time:** 39h

Theory classes: 8h

Practical classes: 2h

Laboratory classes: 4h

Self study : 25h

### (ENG) Topic3.- Space vector model of A.C. drives

**Description:**

(in process)

**Full-or-part-time:** 16h

Theory classes: 4h

Practical classes: 2h

Self study : 10h

### (ENG) Topic 4.- Asynchronous motor drives

**Description:**

(in process)

**Full-or-part-time:** 43h

Theory classes: 6h

Practical classes: 4h

Laboratory classes: 4h

Guided activities: 4h

Self study : 25h



### (ENG) Topic 5.- Synchronous motor drives

**Description:**

(in process)

**Full-or-part-time:** 23h

Theory classes: 4h

Practical classes: 2h

Laboratory classes: 2h

Self study : 15h

## GRADING SYSTEM

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## BIBLIOGRAPHY

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**Basic:**

- Boldea, I.; Nasar S.A. Electric drives. 3th ed. Boca Raton: CRC Press, Taylor & Francis Group, 2017. ISBN 9781498748209.
- Leonhard, W. Control of electrical drives. 3rd ed. Berlin [etc.]: Springer, 2001. ISBN 3540418202.
- Crowder, Richard. Electric drives and electromechanical systems : applications and control [on line]. Kidlington, Oxford, England ; Cambridge, Massachusetts: Butterworth-Heinemann, 2020 [Consultation: 20/02/2024]. Available on: <https://www.sciencedirect-com.recursos.biblioteca.upc.edu/book/9780081028841/electric-drives-and-electromechanical-systems>. ISBN 9780081028841.
- Dubey, Gopal K. Fundamentals of electrical drives. 2nd ed. Pangbourne: Pangbourne, 2001. ISBN 084932422X.
- Sul, Seung-Ki. Control of electric machine drive system [on line]. Oxford, Hoboken, NJ: IEEE Press, John Wiley & Sons, 2011 [Consultation: 15/02/2024]. Available on: <https://onlinelibrary-wiley-com.recursos.biblioteca.upc.edu/doi/book/10.1002/9780470876541>. ISBN 9780470590799.
- Fraile Mora, Jesús. Accionamientos eléctricos. Madrid: Ibergarceta publicaciones, 2016. ISBN 9788416228492.